

i2 Technologies

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Sales and Operations Planner



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Sales and Operations Planning Process

Sales and Operations Planning (S&OP) is a business planning process that helps companies establish and monitor the following:

- Sales Plan
- Production Plan/Lead Times for Customer Order Fulfillment
- Inventory Plan/Customer Service Levels
- Backlogs
- Shipments
- Financial Targets
- Other Measures Critical for the Business Unit

Companies and management teams that lack a formal process for S&OP often face poor customer service, high inventory levels, and long order backlogs (unshipped customer orders, including past due, current, and future) leading to a loss of customers.

APICS defines Sales and Operations Planning as the following:

"S&OP is a process that provides management the ability to strategically direct its businesses to achieve competitive advantage on a continuous basis by integrating customer-focused marketing plans for new and existing products with the management of the supply chain. The process brings together all the plans for the business (sales, marketing, development, manufacturing, sourcing, logistics, and financial) into one integrated set of plans. It is performed at least once a month and is reviewed by management at an aggregate (product family) level."

What are the objectives of S&OP?

The various objectives of Sales and Operations Planning are:

- Support and measure the business plan.
- Ensure that the plans are realistic, using advanced supply/demand modeling/planning systems.
- Effectively manage change. Respond efficiently to abrupt changes in demand and supply.
- Better manage finished goods inventory and/or backlog to support customer service.
- Measure performance against desired goals set by the business plan.
- Build teamwork—allow sales, marketing, manufacturing, logistics/operations, and finance to take part in the planning process under a unified framework of S&OP. Most times, each of these departments has its own agenda, and S&OP will provide a unifying framework and a single forecast that drives the company's business.

Constrained Sales and Operations Planning Process

Create a business plan

Start with a business plan defined for the year and then divide into expected business goals by any specified time period (e.g., by Quarter).

Possible business goals considered are:

- Revenue/Cash Flow
- Expenses
- Inventory
- EPS
- Levels of Customer Service
- Productivity/Quality Improvements
- The business plan for a business entity is expressed in dollars and is the main input to the Sales and Operations Planning process.

Create an unconstrained demand plan (sales plan)

Forecasting is done at a SKU level or any product family level that makes the most business sense. This is done using RHYTHM Demand Planner. RHYTHM Demand Planner supports three paradigms to arrive at the optimal demand quantities for each product/location pair.

- Multivariate and Causal Time Series Analysis
- Promotions Planning and Demand Creation
- Collaborative Forecasting Between Trading Partners

After the unconstrained demand plan is generated, it is input to RHYTHM Master Planner to optimally constrain the plan.

Create a safety stock inventory plan

Due to forecast errors and variability in supply, it is probable that the planned quantity will not always be sufficient to meet all actual demands in a period. We need to calculate the safety stock quantities required to cover both the forecast error as well as the variability in supply. Assuming that the safety stock quantities are acceptable, the next step is to generate an optimal supply plan that will support the safety stock levels and the unconstrained demand. This is enabled by RHYTHM Inventory Planner.

Create a master plan

RHYTHM Master Planner is used to create constrained supply (material/capacity/distribution) and inventory plans (this will have different templates based on whether it is targeting the Distribution-Intensive, Material-Intensive, or Asset-Intensive industries). The preferred sources, within lead time, for each of these forecasts is determined. The feasible plan (production/inventory plan) is then output to the S&OP database.

Conduct a sales and operations review

The demand plan, the supply plan, and the complete inventory plan are read into the S&OP database. Concurrently, the actual data are read into the S&OP database and compared with the original plan. If the variances are outside the user-defined tolerances, they are reported as problems to the user in a Problem Window.

The planner should be able to see where actual customer service has fallen below the planned service level in the past. The planner should also be able to see the cause for this problem (drill down from a particular problem). Common causes that could be shown:

- Production not as planned
- Transportation not as planned
- Forecast error greater than planned
- Insufficient safety stock is allocated

Current Product Features

The S&OP review database can track any number of measures. Some of the measures that RHYTHM S&OP will support are:

- Sales—Actual, Plan, and Variance
- Financial—Actual, Plan, and Variance
- Inventory—Actual, Plan, and Variance
- Days/Weeks of Cover/Safety Stocks
- Production—Actual, Plan, and Variance
- Competitor Sales
- Competitor Sales Variance
- Backlogs
- Backorders
- Shipments
- Customer Service Level
- Order Fill Rate
- Conformance to Schedule (fraction of combinations with variances that are more than the acceptable threshold)

Like other i2 products, the Problem Window in RHYTHM S&OP is the starting point to isolate the key problem issues from the mass of planning data. Using a very intuitive representation of the S&OP database, the user can create sophisticated problem profiles. They may then periodically generate a list of updated problems. The user can drill down into the detailed problem reports from this high-level interface. A sample problem window and a report are shown.

	Plans	Time	Product	Geography	Actual Inventory	Actual Warehouse Capacity
1	Current	Mar 97	Product	Ontario	85657	55000
2	Current	Apr 97	Product	Ontario	70232	55000
3	Current	Jun 97	Product	Ontario	83918	55000
4	Current	Sep 97	Product	Ontario	83463	55000
5	Current	Nov 97	Product	Ontario	70431	55000
6	Current	Dec 97	Product	Ontario	82028	55000
7	Current	Feb 98	Product	Ontario	73485	55000
8	Current	Mar 98	Product	Ontario	80304	55000

Figure 1 - Problem Window

The product will provide the end user with custom report creation capabilities as well as added support for connecting to a report writing tool, such as Crystal Reports, to provide high-quality reports with flexible formatting. The Sales and Operations Planner data will also be viewable via a web browser either on an intranet or Internet with full security.

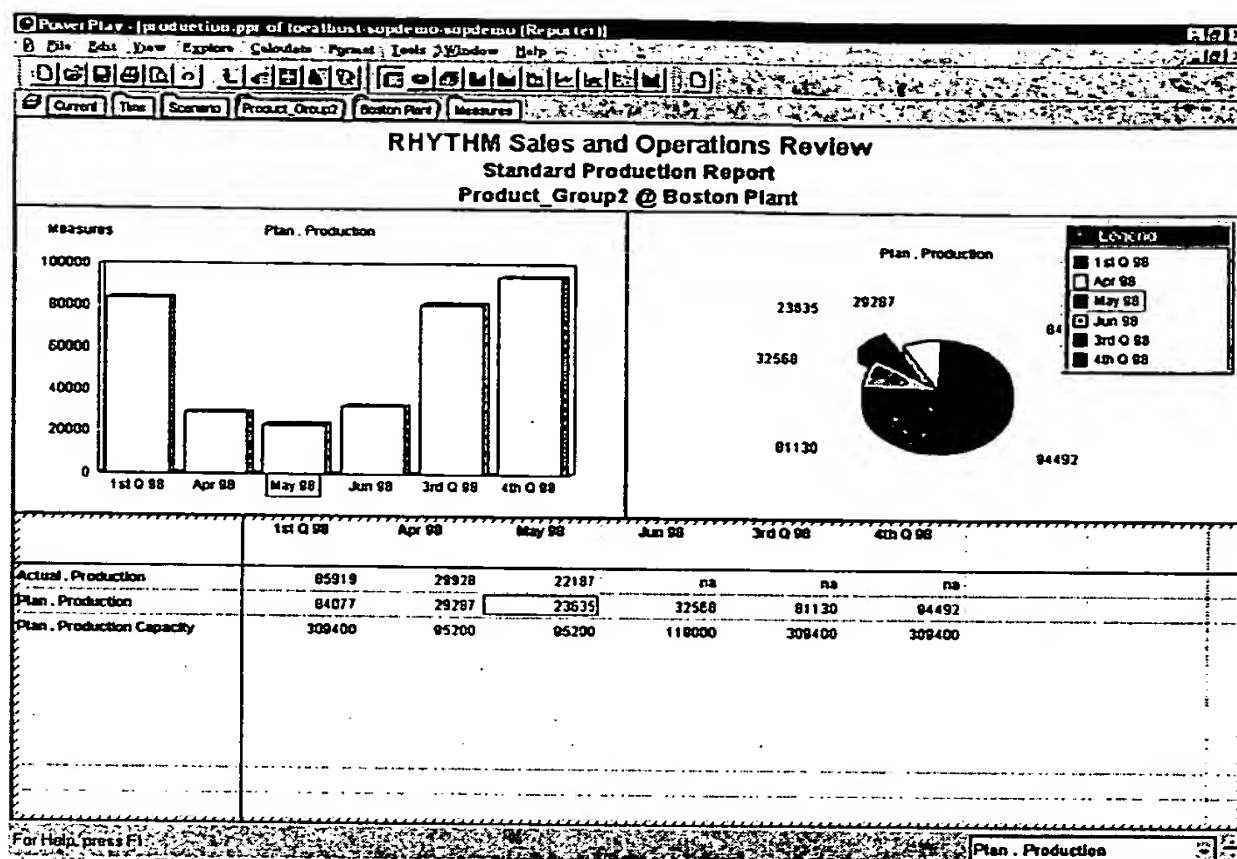


Figure 2 - Sample Report

Hardware/OS Support

The clients will be supported on Windows NT 3.51 and higher. The RHYTHM Demand Planner engine currently runs on NT and IBM AIX. The RHYTHM Supply Chain Planner engine and the RHYTHM Sales and Operations Review engine run on most UNIX platforms.

RHYTHM S&OP review database is based on a multi-dimensional OLAP engine. It has a multi-threaded and distributed architecture. It can be accessed via a Web browser and supports a variety of report writing tools.

Product Benefits

Because RHYTHM S&OP integrates the key planning processes within an enterprise, it enables customers to see tremendous benefits. Listed below are some of the advantages to using RHYTHM S&OP.

Benefit Summary

1. RHYTHM S&OP links all the planning processes within the business: the business plan, the sales plan, the supply (production, inventory, distribution, and transportation) plan, and the financial plan. It then reviews the performance measures (customer service, schedule adherence, etc.) for continuous improvement.

2. One of the biggest benefits of S&OP is it forces the business toward a *single* consensus forecast that drives all of the business functions such as sales, operations, and finance.
3. It enables the creation of a realistic operations plan (production, inventory and distribution), taking into account all the constraints in the supply chain.
4. It gives the general manager a four-way vision to view the business:
 - look into the future for potential problems
 - look back into the past to see where they failed
 - look up at the strategic/business plan
 - look down into the details of the operational plans

Key Questions

RHYTHM S&OP allows different departments within a company to come to consensus on a single forecast. Additionally, the validity of the forecast is verified by taking into account operational constraints such as capacity, distribution, and material to produce a realistic and attainable operations plan.

RHYTHM S&OP provides the capability to save the plans and to measure the performance and the variance of the plan from what actually occurred. Additionally, it provides a multidimensional view of the data and flexible reporting capabilities.

The S&OP process that the product is designed to implement is outlined below.

Where are we now?

- Actual revenue
- Actual sales
- Actual production
- Actual inventory
- Customer service level performance, including customer delivery performance, and stock availability

Where did we want to be?

- Planned revenue (budget or business plan)
- Planned sales
- Planned production
- Planned inventory/target customer service level

How did we get here?

- Drill down into execution plan versus actual databases to provide explanations such as unanticipated resource down times, supplier delivery performance not on target, materials unavailable on time, and competition running a promotion at the same time

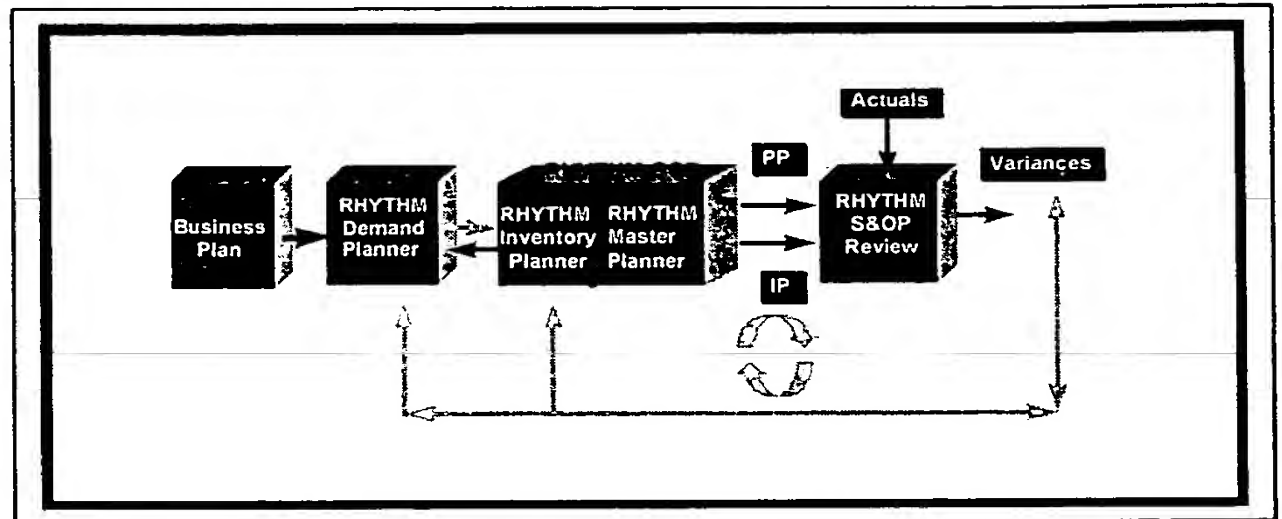
Where do we want to be?

- Should we redo the demand plan?
- Are the customer service levels worth the cost?
- Do we need to find alternate suppliers for key materials to reach target schedule adherence?
- Should we change our shipping company to improve supply variance?

How do we get there?

- Revise operational sales forecast
- Revise inventory plan
- Modify service levels
- Revise master production schedule/plan

RHYTHM Products that Enable S&OP



RHYTHM Demand Planner

- RHYTHM Master Planner
- RHYTHM Inventory Planner
- RHYTHM S&OP Review (OLAP Engine)
- RhythmLink (Optional)
- RHYTHM Active Data Warehouse (optional)—The Active Data Warehouse provides a common integrated source for data which simplifies maintenance of the data. RhythmLink is required with RHYTHM Active Data Warehouse to move data between the Data Warehouse and the planning engines.

